

CLAIMS

1. A head holding member for guiding a tab portion formed at one end of a head support arm constituting an actuator to an escaping position, and holding the tab portion in the escaping position when an unloading operation of the actuator is performed by an operation stopping command of a disk device;

wherein the shape of the escaping position comprises:

a head holding plane for holding the tab portion;

a load side projecting portion formed on the loading side of the head holding plane; and

an unload side wall face formed on the unloading side of the head holding plane.

2. The head holding member of claim 1, wherein the head holding plane and the unload side wall face are connected by a curved surface.

3. The head holding member of claim 1, wherein a load side wall face having an angle perpendicular to the head holding plane is formed on the loading side of the head holding plane, and

a head upper wall face continuing to the load side wall face forms a face opposed to the head holding plane of the load side projecting portion.

4. The head holding member of claim 3, wherein the head holding plane and the load side wall face are connected by a curved surface.

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5. The head holding member of claim 1, wherein a load side wall face having an angle smaller than 90° with respect to the head holding plane is formed on the loading side of the head holding plane, and

10 the load side wall face forms a face opposed to the head holding plane of the load side projecting portion.

6. The head holding member of claim 1, wherein a third slanting face having an angle greater than 90° with respect
15 to the head holding plane, and a head moving plane parallel to the head holding plane are formed between the head holding plane and the unload side wall face.

7. The head holding member of claim 5, wherein a head moving
20 slanting face having an angle greater than 90° with respect to the head holding plane, and a head moving plane parallel to the head holding plane are formed between the head holding plane and the load side wall face.

25 8. The head holding member of any one of claims 1 to 7, wherein

the head holding plane is formed so as to be parallel to the recording face of a recording medium of the disk device, or have an acute angle with respect to the recording face.

5 9. The head holding member of any one of claims 1 to 8, wherein the width of the head holding plane is greater than the width of the tab portion of the head support arm in a direction perpendicular to the rotation center of a rotating axis of the actuator.

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10. A head holding method in a disk device, the disk including:
a recording medium rotatably arranged around a rotating axis;

15 a head support arm having a head and a tab portion at one end thereof, and able to be rotated around a first rotating axis parallel to the rotating axis by a first bearing portion arranged in a position separated from the rotating axis;

20 a second bearing portion arranged between the head and the first bearing portion and able to be rotated around a second rotating axis perpendicular to a center line of the longitudinal direction of the head support arm;

two or more abutting portions located on the second rotating axis and abutting on the head support arm or the second bearing portion;

25 a leaf spring portion for connecting the head support

arm and the second bearing portion; and

a lamp portion for holding the tab portion at an escaping time of the head support arm,

wherein, when the tab portion is moved to an escaping
5 position to perform an unloading operation of the head support arm by an operation stopping command of the disk device in the lamp portion in which a load side projecting portion formed on the loading side of the head holding plane for preventing the movement of the tab portion from the escaping position to
10 the direction of the recording medium, an unload side wall face formed on the unloading side of the head holding plane, and the head holding plane for holding the tab portion in the escaping position are formed,

the head holding method comprising:

15 applying forces in the radial direction of the recording medium and a direction perpendicular to the radial direction and biasing force of the leaf spring portion to the head support arm;

moving the head support arm in the radial direction
20 of the recording medium; and

abutting the tab portion on the unload side wall face of the lamp portion and then holding the tab portion in the head holding plane as the escaping position of the tab portion by at least the biasing force of the leaf spring portion among
25 the forces applied to the head support arm.

11. The head holding method of claim 10, wherein, after the unloading operation for moving and holding the tab portion of the head support arm in the head holding plane of the lamp portion is performed by the operation stopping command of the disk device, the tab portion is once operated on the unload side and is operated on the load side by a load command of the disk device.

12. The head holding method of claim 10, wherein the head support arm has a voice coil connected to the head support arm through a voice coil holder, and

the head support arm swings around the first rotating axis by supplying an electric current to the voice coil and operating the voice coil.

13. The head holding method of claim 12, wherein the waveform of a driving electric current applied to the voice coil connected to the head support arm is set to a pulse waveform when the head support arm is operated on the load side.

14. A disk device comprising:

a recording medium rotatably arranged around a rotating axis;

a head support arm having a head and a tab portion at one end thereof, and able to be rotated around a first rotating

axis parallel to the rotating axis by a first bearing portion arranged in a position separated from the rotating axis;

a second bearing portion arranged between the head and the first bearing portion and able to be rotated around a second
5 rotating axis perpendicular to a center line of the longitudinal direction of the head support arm;

two or more abutting portions located on the second rotating axis and abutting on the head support arm or the second bearing portion;

10 a leaf spring portion for connecting the head support arm and the second bearing portion; and

a lamp portion for holding the tab portion at an escaping time of the head support arm,

wherein, when the tab portion is moved to an escaping
15 position in the lamp portion in which a load side projecting portion formed on the loading side of the head holding plane for preventing the movement of the tab portion from the escaping position to the direction of the recording medium, an unload side wall face formed on the unloading side of the head holding
20 plane, and the head holding plane for holding the tab portion in the escaping position are formed;

forces in the radial direction of the recording medium and a direction perpendicular to the radial direction and biasing force of the leaf spring portion are applied to the head support
25 arm; the head support arm is moved in the radial direction of

the recording medium; and the tab portion abuts on the unload side wall face of the lamp portion and is then held in the head holding plane as the escaping position of the tab portion by at least the biasing force of the leaf spring portion among
5 the forces applied to the head support arm.

15. The disk device of claim 14, wherein, after the unloading operation for moving and holding the tab portion of the head support arm in the head holding plane of the lamp portion is
10 performed by an operation stopping command of the disk device,
the tab portion is once operated on the unload side and is operated on the load side by a load command of the disk device, and is jumped up without abutting on the unload side wall face lower portion.

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16. The disk device of claim 14, wherein the head holding plane and the unload side wall face are connected by a curved surface.

20 17. The disk device of claim 14, wherein a load side wall face having an angle perpendicular to the head holding plane is formed on the loading side of the head holding plane, and
a head upper wall face continuing to the load side wall face forms a face opposed to the head holding plane of the load
25 side projecting portion.

18. The disk device of claim 17, wherein the head holding plane and the load side wall face are connected by a curved surface.

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19. The disk device of claim 14, wherein a load side wall face having an angle smaller than 90° with respect to the head holding plane is formed on the loading side of the head holding plane, and

10 the load side wall face forms a face opposed to the head holding plane of the load side projecting portion.

20. The disk device of claim 14, wherein a third slanting face having an angle greater than 90° with respect to the head
15 holding plane, and a head moving plane parallel to the head holding plane are formed between the head holding plane and the unload side wall face.

21. The disk device of claim 18, wherein a head moving slanting
20 face having an angle greater than 90° with respect to the head holding plane, and a head moving plane parallel to the head holding plane are formed between the head holding plane and the load side wall face.

25 22. The disk device of any one of claims 14 to 21, wherein

the head holding plane is formed so as to be parallel to the recording face of a recording medium of the disk device, or have an acute angle with respect to the recording face.

5 23. The disk device of any one of claims 14 to 22, wherein the width of the head holding plane is greater than the width of the tab portion of the head support arm in a direction perpendicular to the rotation center of a rotating axis of the actuator.

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24. The disk device of claim 14, wherein the waveform of a driving electric current applied to a voice coil connected to the head support arm is set to a pulse waveform when the head support arm is operated on the load side.

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25. The disk device of claim 14, wherein a bearing in the second bearing portion is a pivot bearing with the pivot as an abutting point.

20 26. The disk device of claim 25, wherein the pivot is formed in a conical shape or a pyramidal shape.

27. The disk device of claim 14, wherein a bearing in the second bearing portion is a pivot bearing with one point of
25 an abutting curved surface as an abutting point, or with an

abutting ridgeline as an abutting line.

28. The disk device of claim 14, wherein the head support arm has a voice coil connected to the head support arm through
5 a voice coil holder, and

the head support arm swings around the first rotating axis by supplying an electric current to the voice coil and operating the voice coil.

10 29. The disk device of claim 14, wherein the tab portion of the head support arm has pressing force for pressing against the head holding plane of the lamp portion at a stopping time of the rotation of the recording medium.

15 30. The disk device of claim 14, wherein the lamp portion is arranged in the vicinity of the outer circumference of the recording medium, and a first magnet is arranged so as to be opposed to the voice coil on the side opposed to the recording medium side with respect to the head support arm.

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31. The disk device of claim 14, wherein the lamp portion is arranged in the vicinity of the rotation center of the recording medium, and a second magnet is arranged so as to be opposed to the second voice coil on the recording medium side
25 with respect to the head support arm.